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The Goat Island Rockshelter: New Light From Old Legacies (Part 1)

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CHAPTER 2

CULTURAL AND HISTORICAL BACKGROUND

Prehistory

I obviously in two summers' work haven't been able to reach satisfactory conclusions on the Hudson Valley occupations -- that would take at least twenty years [letter to William A. Ritchie from Mary Butler, June 20, 1940].

In the fifty years since the above quote was written, archaeologists have still not reached satisfactory conclusions on Hudson Valley prehistory. Major syntheses have been few and infrequent (see Ritchie 1958; Funk 1976, 1978).

History of the Investigations of Hudson Valley Prehistory

In 1949, William A. Ritchie, the New York State Archaeologist, came to the New York State Museum in Albany from the Rochester Museum. In doing so, he transplanted to eastern New York the scheme of culture history he had developed with data largely from central New York (Curtin and Bender 1990:48). His efforts in the Hudson Valley were then directed toward refining that scheme; these efforts culminated in the publication of the inconclusive and highly descriptive An Introduction to Hudson Valley Prehistory (Ritchie 1958). Although Ritchie had knowledge of Dr. Butler's work in the Hudson Valley, access to the materials and documentation, and a willingness by Butler to

collaborate, he did not include information on any of her sites in his publications (e.g., Ritchie 1944, 1958, 1969a). This may have been due to differences in their intellectual approach to archaeology, which I will discuss in this chapter, and in their field methods (see Chapter 4).

Robert E. Funk, Ritchie's successor as New York State Archaeologist, established his research in the Hudson Valley (see Funk 1965, 1976, 1978). His major work on Hudson Valley prehistory (1976), published a decade after it was written, focused on chronology and continued to build on the work of Ritchie (1958).

Many less extensive research projects in the Hudson Valley, usually concerning particular sites, have been conducted over the years (e.g., Bender and Brumbach 1986; Curtin and Bender 1990; Eisenberg 1974, 1978, 1989, n.d.; Fisher 1983). However, these works have continued to rely on Funk's (1976) historical-developmental stage classification scheme as adopted from Ritchie (1969a), often using it as a matter of "convenience" (e.g., Eisenberg n.d.). In more recent publications, Funk (1978, 1983) has made revisions in the dates for particular components and has included data on paleoenvironments.

The Historical-Developmental Framework

Archaeologists have inherited a chronological framework for Hudson Valley prehistory that was conceived in the 1950s. The notion of culture in this framework is a

normative one; chronology and trait lists are viewed as the primary task of archaeologists (see Willey and Phillips 1958:11).

Ritchie greatly systematized the data on Hudson Valley cultural history, but in doing so he used narrow criteria (i.e., goodness of fit to a prior classificatory scheme) to evaluate the region's research potential (Curtin and Bender 1990:49). He was, therefore, less interested in sites that did not fit his scheme, or that were not either "stratified" or "single component." Ritchie's works were "occupied exclusively...in the effort to place his archaeological material in some taxonomic pigeon-hole" (Taylor 1967:78). His enthusiastic embracing of the Midwestern classificatory system precluded an adequate consideration of culture and human life (Taylor 1967:78).

Funk's work has continued this approach of ordering sites or "components" using the detailed description of artifact types and other traits thought to form elements of highly conservative, normative prehistoric cultures (Curtin and Bender 1990:50).

A full review and/or critique of Hudson Valley prehistory is neither possible nor desirable in this context. In Table 1 I abstract the current historical-developmental scheme for the Hudson Valley to allow its evaluation and to provide a chronological framework for the materials from the Goat Island Rockshelter.

In this table I use periods rather than stages. Although these terms are often used interchangeably, "periods" should be used to construct chronology, while "stages" define cultural development (Willey and Phillips 1958:65-6). Therefore, periods are linked to chronometric dates while stages are time-free in any absolute sense. In the only extant synthesis of New York State prehistory, Ritchie (1969a) did not offer a scheme of time-free stages, but explicitly utilized a historical-developmental framework that consisted of stages partly anchored by chronometric dates (Funk 1984:138). Funk (1976) continued the use of this scheme in his synthesis of Hudson Valley prehistory, although he has since become less comfortable with it.

A few other terms need to be defined here. A component is defined as "the manifestation of any given focus at a specific site" (McKern 1939:308). A complex is a minimal cluster of cultural traits (Funk 1984:137). A phase is an archaeological unit possessing distinguishing traits, spatially limited to a certain locality or region and chronologically limited to a relatively brief interval of time (Willey and Phillips 1958:22). Therefore, a phase is comprised of a number of components; the term "focus" was abandoned some decades ago.

Evaluation of the Framework

Archaeologists are increasingly concerned with anthropological questions about past lifeways and cultural

change; archaeologists attempt to use their knowledge of prehistory to contribute to anthropology, social science, and to the understanding of human behavior (Plog 1974:4-5). They are also increasingly sensitive to political and social factors that influence our understanding of the past (see Keene [1986], Moore and Keene [1983], and Wobst and Keene [1982]).

The chronology developed by Ritchie and Funk for New York State is a monumental contribution and is essential, if not sufficient, to answering some of these more anthropological questions. It is a framework that can facilitate anthropological research if used as a construct on which to build explicit theory. On the other hand, if it is relied on exclusively or slavishly it can be imprisoning.

Butler did not have the convenience of using such a scheme to interpret the results of her Hudson Valley Archaeological Survey. Her letters imply a frustration with "the state of the art" in 1939; she seemed to be turning to Ritchie to provide some "answer." If she had access to a historical-developmental scheme like the one that exists today, she would have been able to better evaluate her findings. Instead, frustrated and insufficiently funded, she returned to Pennsylvania, and the collection was left behind.

The framework was essential to my own analysis of the remains from the Goat Island Rockshelter (see Chapter 3).

The historical-developmental scheme has great strength when used as a framework for archaeological data, rather than being used as historical narrative. The scheme has inherent weaknesses; the most obvious and important in the context of this thesis concern the Early and Middle Woodland Periods.

Early Woodland Period (3,000-2,500 B.P.)

Ritchie and Funk (1973:96) characterized this period by certain artifact and burial traits. The first known ceramics are assigned to this period -- Vinette 1. Artifacts and food refuse indicate a hunting-gathering-fishing economy. One wonders, then, why Funk (1983) continues to divide the Archaic and Early Woodland periods into different "stages", which implies a significant cultural development. Dincauze (1984:2) criticized this distinction:

Funk finds little to indicate significant changes in lifestyle...Can we show that the adoption of primitive pyrotechnology (ceramic cooking vessels) makes a significant difference in lifestyles and successive adaptations? We cannot, or at least we have not.

Funk himself has grown uncomfortable with the "stage" divisions between the Archaic and Woodland based on the appearance of ceramics (see Funk 1984:128).

According to Funk (1989:92), there is "something of a hiatus throughout the Hudson drainage" during the Early Woodland Period. This may in part be an artifact of the duration that has been assigned to various periods; the Early Woodland spans 500 years, while the Late Archaic and

Middle Woodland are allotted 3,000 and 1,500 years, respectively (Table 1). Dividing the periods in this way makes little sense, since subsistence is thought to have changed little throughout these periods.

For New York State, Ritchie (1969:170-203) defined two Early Woodland phases: (1) the older Meadowood Phase ca. 2,710 B.P. (most of the Meadowood sites are located in central and western New York), and (2) the Middlesex phase (no Middlesex sites have been identified in the Hudson Valley, with the possible exception of the Barton site, and no radiocarbon dates exist for this phase in New York [Funk 1978a:42]).

Other phases for the Early Woodland cultures outside the Hudson Valley are likewise poorly known (Funk 1983:337). Ritchie (1969b) defined the Lagoon Phase, dated by radiocarbon from 2,600-2400 B.P., on Martha's Vineyard. The phase was characterized by the "lobate-stemmed" Lagoon-type point, the "small stemmed" Rossville-type point, atlatl weights, and Vinette 1 pottery (Ritchie 1969b). This Lagoon Phase may be related to a larger tradition identified by lobate-stemmed projectile points and ceramics other than Vinette 1 (this will be described in the next section under the Bushkill complex).

Middle Woodland Period (2,500-1,000 B.P.)

Funk (1976) divides the Middle Woodland Stage in the Hudson Valley into three major phases: Fox Creek, Fourmile

and Hunter's Home. I will discuss only the Fox Creek Phase and the Bushkill complex (which Funk does not define for the Hudson Valley).

Bushkill Complex. The Bushkill complex was first identified in the Delaware Valley by Kinsey (1972). The complex has a time range of 2400-2100 B.P. (Kinsey 1974:11). Beyond the Delaware Valley, the Bushkill complex has been identified occasionally in the Schoharie and Susquehanna Valleys of New York (Funk 1983:337), but rarely in the Hudson Valley (e.g., Vargo and Vargo 1986). The Rossville point is diagnostic for the complex (Kinsey 1972:364).

In New York State Ritchie (1971:46) identifies Rossvilles as very Late Archaic, Transitional and Early Woodland; he suggests a "genetic" relationship with the Poplar Island type (defined as Late Archaic by Kinsey [1959]) due to its "shape." Lobate-stemmed Lagoon points are perhaps even more similar (see Ritchie 1971:123). The Bushkill complex shared many traits with the Lagoon complex including Lagoon points and Vinette I pottery. However, also present at Bushkill phase sites were dentate-stamped, fabric-marked and net-impressed pottery, not found in Lagoon. Ritchie sees more than a coincidental relationship between the users of the Lagoon points and Adena points, suggesting Adena influence (see Ritchie 1969b:224, 1971:123), which is also posited for the Middlesex phase (Ritchie 1969a:201-4).

Kinsey has a different explanation:

..a similarity in form exists between Lagoon, Lackawaxen Stemmed..Fox Creek, and Ritchie's... Steubenville Stemmed [Fox Creek]..These morphological carry-overs from Late Archaic through Early and Middle Woodland can be more readily attributed to the persistence of a generally conservative Piedmont projectile point tradition than to Adena influence. [Kinsey 1972:367]

In his discussion he also adds the Rossville point into this relationship. According to Kinsey (1973:73), Smith's (1950) concept of North Beach focus for coastal New York contains projectile point and pottery types that are shared with Lagoon and Bushkill complexes. Kinsey cited evidence of a "cultural relationship" to the Fox Creek complex of eastern New York:

Lagoon, Bushkill, and Fox Creek manifestations are considered as being a single, cultural-temporal continuum having six recognized geographic loci: tidewater areas of Virginia, Maryland, and the Delmarva Peninsula, Middle Delaware Valley, Upper Delaware Valley, coastal New York, eastern New York, and coastal Massachusetts [1973:243].

Kinsey views the Lagoon, Fox Creek and Bushkill complexes as part of a larger Early to Middle Woodland cultural continuum that spans from 2800-1500 B.P. (Kinsey 1974:244). The details of this long "cultural continuum" are unclear; detailed knowledge of the material culture and chronology of this "complex" may help to fill in the apparent Early Woodland "hiatus."

Fox Creek Phase. This phase is thought to have lasted about three hundred years in eastern New York, from 1700-

1400 B.P., on the basis of radiocarbon dates from the Westheimer 2 site (Funk 1978, 1983). According to Funk (1976), diagnostic artifacts include Fox Creek Stemmed projectile points, Fox Creek Lanceolate points, Greene Points, Petalas blades, pottery with net-marking, zoned incising, cord-marking, dentate and rocker stamping.

Fox Creek points have been found in ceramic contexts in coastal New York, lower Hudson, and the Delaware Valley including New Jersey and adjoining areas of the mid-Atlantic (see Cross [1941, 1956], Kaeser [1968], Ritchie [1949], Smith [1950], and Stephenson et al. [1963]). Funk (1976:293) suggests a somewhat unified "Fox Creek" culture ca. 1450-2300 B.P., which shared Fox Creek points, net-impressed, fabric-impressed, zoned incised, dentate-stamped and rocker-stamped pottery, with a broad distribution from upstate eastern New York to the lower Delaware Valley and coastal New York. Similarly, Dincauze (1974:51) suggests the existence of a province sharing ceramic attributes (rocker- and dentate-stamped) and lanceolate points that extends from the Hudson Valley east to the Boston area. This may, again, be a part of the Early to Middle Woodland "Piedmont tradition" defined by Kinsey (1972, 1973, 1974).

Although the Bushkill complex has rarely been identified in the Hudson Valley (cf. Vargo and Vargo 1986), there is some tantalizing evidence for a Bushkill burial at the Goat Island Rockshelter (see Chapters 3 and 4).

Evidence for this complex in the Hudson Valley exemplifies how the existing cultural-historical framework can constrain archaeological interpretations. For example, by relying on typologies established for central and western New York, Funk's (1976) analysis of Middle Woodland ceramics in the Hudson Valley masks potentially important differences, such as the existence of a Bushkill complex. He acknowledges that cultural interaction likely took place during the Middle Woodland between the Hudson Valley and areas to the south and west (and maybe to the east) (Funk 1976). However, archaeologists will not be able to fully realize cultural connections until they divorce themselves of the reifying ceramic and projectile point typologies for the Woodland periods.

Historic Period

According to Funk (1978:70), few sites of the contact period are known for the Hudson Valley; none of the villages or "castles" mentioned in early European accounts have been located or excavated, with the exception of a site at Croton Neck excavated by Harrington (1925).

History of Goat Island

Today, the three islands off the east shore of the Hudson River in the town of Redhook, from north to south are Magdalen Island, Cruger Island and Skillpot Island (the latter is not much of an island, merely a pile of rocks). It appears, however, that Magdalen Island was originally the

name for Cruger Island. On June 3, 1637, in its voyage from Fort Orange back to Amsterdam, the ship Rensselaerswyck anchored 2 leagues (6 miles) north of "Magdalen Island" to get some ballast for the ship (van Laer 1908:378). The exact location of the source of this ballast is unclear.

In July 1649, the Remonstrance of New Netherland (O'Callaghan 1853) warned that the English from New Haven had a trading post "east or south east of Magdalen, at no greater distance than six leagues from the North River" (Hudson River). O'Callaghan believed this referred to the English at present Springfield, but it might have been an English site much closer, on the Housatonic River (Paul Huey, personal communication 1990).

The map of New Netherland, published in 1656 by Adriaen van der Donck (Figure 14), has three prominent islands close together in the mid-Hudson Valley (from north to south): Jan de Wit's Eylant, Magdalen Eylant, and Slypsteen Eylant (which means whetstone in Dutch; Paul Huey, personal communication 1990). The northern island may have been named for Jan de Wit, an individual who sailed on the ship Vos from Amsterdam to the Hudson in April or May, 1613, to trade (Hart 1959). According to Brodhead (1859:54): "De Witt, sailing up the Mauritius River in the "Little Fox" gave his name to one of the islands near Red Hook." However, other documents indicate that in 1613 the captain of the Vos, Pieter Fransz, and two others were killed by the

Indians; Jan de Witt then became the skipper of the Vos and sailed back to Amsterdam -- without ever sailing up the Hudson (Hart 1959:31,65; Stokes 1916:67).

In 1658, in the location of the nearby modern day Kingston, Peter Stuyvesant chose the location of a village soon to be called Wiltwick, which was to enjoy strategic advances in agriculture and trade (Huey 1981:4).

The Mahican group located in the mid-Hudson during the 17th century and likely just before, were the Wappingers (Beauchamp 1900:59). The homeland of the Mahican Indians -- Algonquian speakers -- extended from Lake Champlain south to western Dutchess County, and from the Schoharie Valley to south-central Vermont in the east (Figure 15; Brasser 1978:198). Beauchamp (1900:59) notes a group of "Sepascots" at Rhinebeck, nearby, and a "few Esopus Indians" on the west shore of the Hudson, just opposite Magdalen Island.

Colonization by the Dutch and land sale by the Mahicans started slowly after 1630, receiving impetus only in the last decades of the 17th century (Brasser 1978:203). In January 1682, Captain Jan Bachter, an Esopus Indian, contracted to sell land "on the east side near Magdalen Island" to three Dutchmen (van Laer 1918:549).

The first land patent in the vicinity of the islands was granted to Peter Schuyler in 1688 (Carey and Waines 1986:VIII-24). Barent Van Benthuyzen acquired several thousand acres of the original patent including most of

North and South Bay and Cruger Island (then Magdalen Island) (Carey and Waines 1986:VIII-24). In 1721, a large tract of land north of the Van Benthuyzen property was purchased by Nicholas Hoffman of Kingston (Carey and Waines 1986:VIII-24). He constructed a home and wharf at the north end of North Bay, very near to Goat Island, and a mill at the mouth of the nearby Stony Creek (Carey and Waines 1986:VIII-24).

In the mid-18th century, there began a series of land grants petitions for the area, including the islands (see O'Callaghan 1987:251,257,428). A portion of a map of "The Lands of Barent van Benthuyzen", dated 1747 (Figure 16), shows the name "Slipsteen" for the island just to the north of today's Cruger Island (labeled Magdalen Island), with no third island to the south.

Two maps published by the Eghert Benson Historical Society (1987) from 1797 and 1815, show three islands (Figure 17 and 18): the first two, north to south, are Slipsteen Island and Magdalen Island, with the much smaller one to the south unnamed (it's in the vicinity of present day Skillpot Island).

A map of Rhinebeck from "previous to 1812" (Figure 19), also shows Goat Island as Slipsteen Island, with no third island to the south.

In 1835, John Cruger bought and named Cruger's Island (Carey and Waines 1986:VIII-25). An 1894 map (in Bruce 1982) shows "Cruger's Island" where it is today, "Goat

Island" to the north of it, and no other island to the south. I was not able to determine the origin of the name "Goat Island." However, Charles Gehring (personal communication 1990) at the New York State Library in Albany suggested that many islands with that name actually had goats kept on them at some point.

The landowner of Goat Island at the time of the Butler excavation in 1939 was Mrs. Johnston L. Redmond; the land was apparently not in use at the time. The Department of Environmental Conservation (DEC) subsequently bought the property, along with Cruger Island and parts of the surrounding Tivoli Bays.

Sometime since the early 20th century the name Goat Island became Magdalen Island, which it remains today.

Summary

The area surrounding the Goat Island Rockshelter is known to have been inhabited and utilized by humans for over 10,000 years -- first by Native Americans, then by Euro-Americans. Using knowledge of the environment (Chapter 1) and culture history (Chapter 2), one would expect the Goat Island Rockshelter to have been used by small, temporary encampments over the millennia.

In order to trace settlement system changes through time, Funk (1976) created a framework for the Hudson Valley in which he divides sites into geographical categories:

- (1) back-country rockshelters,
- (2) back-country open camps,
- (3) inland open camps on large streams
- (4) high bluff stations on the Hudson
- (5) low-lying sites on the Hudson, and
- (6) lakeside open camps.

On the basis of lithic artifacts found on these categories of sites Funk (1976) proposes hunting to have been the principal activity at back-country caves and rockshelters, which were occupied by small groups moving through their fall-winter hunting grounds. Likewise, he proposes a predominance of fishing for the low-lying riparian and lake-side sites (Funk 1976:202).

This normative model proposed by Funk, imposes a framework that does not neatly fit the reality of archaeological data. For example, the Goat Island rockshelter does not fit well into this schema; it is a rockshelter, but is also a low-lying site on the Hudson River. Using Funk's settlement model, one would expect to see a predominance of fishing activity at the site, which, as I will show, is not the case. The following chapter will examine the archaeological remains left behind by the various occupants of the rockshelter in order to determine chronology and the activities represented.

CHAPTER 3

ANALYSIS AND RESULTS

I got the impression...that some pottery students were treating sherds statistically with no consideration of their relation to the original vessel..I feel that [this] leads down an archaeological blind alley, away from the human element...Besides it really doesn't make sense. [letter from Mary Butler to William A. Ritchie, 4/30/47]

This chapter addresses the methods and results of my analysis of the archaeological remains from the rockshelter.

All of the archaeological remains from the rockshelter, as well as the other sites from the Survey, were cataloged either in the field or soon after, in 1939 and 1940. Almost all of the artifacts have catalog numbers either written directly on them in ink or on the bag in which they were contained. The arbitrary catalog number corresponds to a field catalog (for lithic tools only) or to the field notes, to indicate either general provenience (e.g., "surface", "topsoil", "subsoil"), five foot excavation square (with or without level designation), or specific cultural feature (e.g., "ash pit", burial, etc.).

According to the field notes, the soil zones were as follows: (1) Level 1 -- very dark brown-black topsoil, surface to 6-9 inches below the surface, containing ash, charcoal, and numerous artifacts, and (2) Level 2 -- a sandy, yellow subsoil with rockfall, from below Level 1 to 30 inches below surface. These levels do not represent

culturally deposited strata, nor do they correspond to the depositional history of the rockshelter; instead the levels refer only to color zonation in the soil. Nevertheless, artifacts were excavated and often cataloged by "level." This placed certain constraints on my ability to interpret the cultural chronology at the site.

The cultural features seem to have been mostly located in Level 1, with some intrusion into Level 2. Four cultural features were recorded: (1) Feature 1 -- an ash pit, (2) Feature 2 -- a refuse area along the back wall of the shelter, (3) Feature 3 -- an area of burned soil at the drip line of the shelter, which contained a postmold, and (4) a human burial located along the back wall of the shelter (see Figures 8, 9, 20-22; for a detailed discussion of features, see Chapter 4).

As recorded by J. Hennessey, a local collector, on the Site Survey form used for the Hudson Valley Archaeological Survey, there was "some testing by collectors" of the rockshelter before the Butler excavation. This is to be expected since Hennessey worked on her crew and was likely the original informant as to the existence and integrity of the site. Therefore, he may have done some previous "testing" himself.

Unfortunately, the field notes are too general to permit total reconstruction of the provenience of artifacts. The most valuable information was gleaned from the plan view

and profile drawings (Figures 8, 9, 20-22), and the artifact catalog.

Lithic Analysis

A lithic analysis was undertaken in order to discern patterns of lithic reduction and stone tool use through time. Each lithic artifact was coded for certain defined variables: catalog number (from Butler's 1939 catalog), provenience (unit, feature, level, etc.) description (artifact type), raw material, material color, greatest linear measurement (millimeters), tool class (biface, uniface, rough stone, etc.), portion, platform (for flakes only), percent cortex, potlidding (presence indicated by an "X"; see Table 2 for a catalog of all lithic artifacts with recorded variables). The results of the lithic analysis follow.

Debitage

At some point within the last 50 years since the excavation of the rockshelter, a box or bag of flakes from the site was misplaced. The missing flakes number over one thousand. However, since the provenience of these flakes was "miscellaneous topsoil", little could have been said about their relationship to cultural features or to site stratigraphy. Since the remaining flakes are roughly one-tenth of the number lost, one can regard my debitage analysis as a non-random sample.

Of all the flakes analyzed (168), 79% were unmodified, and 9.55% were utilized (Table 3). I determined utilized flakes with a 10X power binocular scope. However, determining utilized flakes is somewhat problematic in an environment such as a rockshelter where accidental modification of flakes by trampling and rock movement can appear as intentional utilization (Beth Wellman, personal communication 1990). A few retouched (3.6%) and otherwise modified flakes (1.8%) were also present (Table 3).

Most of the flakes (73%) were completely lacking in cortex, indicating a secondary stage of lithic reduction. In fact 86% of the flakes had 10% cortex or less (Table 4).

About ten percent of the flakes showed potlidding (heat spalling), and most of these were in Feature 2, which is where most of the flakes from the sample were located.

None of the flakes recovered were less than 10 millimeters in size. I suspect this is because the soil was screened through a mesh which was roughly 1/4", which is also indicated by the size of the fish bones recovered. Eighty-two percent of the total measured were 34mm or less. This strengthens the case for lithic reduction being mostly secondary. However, since some of the flakes were large (nearly 10% of the total were greater than 45 millimeters) and since one chert core was identified, there was obviously some primary lithic reduction taking place at the site.

The raw materials of the flakes were mostly locally available (97.6%). Two flakes were of quartzite and one flake was argillite, both of which are non-local materials. The raw materials available for stone tool making to the prehistoric occupants of the rockshelter were myriad; lithic raw materials are more diverse in northeastern North America than anywhere on the continent (Dincauze 1976a:31). Goat Island lies between the geological area of crypto-crystalline silicates (chert, jasper, chalcedony) in the Paleozoic sediments to the west, and the older, folded igneous and metamorphic rocks of the eastern half of the Northeastern United States (Dincauze 1976a:31). The cherts of New York fall into two basic categories: those occurring in limestones and dolomites, and those occurring in shales (Hammer 1976:47). The former include the parallel formations of Helderberg, Oriskany-Glen Erie, and Onondaga. The latter includes the Normanskill formation (Figure 23). Generally, all of these cherts are dark in color - brown, grey, blue, green, black, deep red or any combination (Hammer 1976:41).

In my analysis I did not try to distinguish between the different formations of chert; since there is a great deal of variation within each chert formation (in both color and luster) this task would have been enormous, if not futile. Identification of other minerals, such as argillite, is tentative; materials were identified by "eye-balling", which

can be problematic (Didier 1975). Although this method is not the most reliable, it is the least destructive.

Color and grain-size (fine vs. coarse-grained) were recorded for each flake. The red, green and green/grey cherts are most likely Normanskill. In fact there are several outcrops of Normanskill chert within a few miles radius of the site. It is typically green, bluish green, dark olive green, red, grayish green and dark green (Hammer 1976:52).

Projectile Points

Projectile points are, by far, the most numerous stone tool category found in the rockshelter, the total number being twenty-three. Since the stratification in the rockshelter was poor and the field notes did not include exact provenience, the only way to date the projectile points was through the use of existing point typologies. Nineteen of the projectile points could be typed, at least tentatively. I primarily relied on Ritchie's Typology and Nomenclature for New York Projectile Points (1971), supplemented by more recent information, where possible, for certain projectile points types (e.g., Dincauze 1972, 1976b; Funk 1976; Ritchie and Funk 1973).

Archaic Period Projectile Points. Seven projectile points date to the Archaic Period as defined in Chapter 2 (see Figure 24). A side-notched, rhyolite, Otter Creek point -- diagnostic of the Vergennes Phase -- was found in

"miscellaneous topsoil" (Figure 24; a). The material likely came from the Delaware Valley in Pennsylvania (Robert Funk, personal communication 1988). Funk (personal communication 1988) suggested to me that this point may represent a Vergennes phase occupation of the site dating from 6,000 B.P., and that the ground slate ulu fragment found in the shelter may have been a part of this component. Unfortunately, the two artifacts were not found in association.

From the Late Archaic Period are one Lamoka/Sylvan-Stemmed and two Normanskill-like points (Figure 24; b-d). These are likely representative of two separate components: 1) Sylvan Lake Phase (ca. 4,200-3,500 B.P.), and 2) River Phase (ca. 3,900-3,700 B.P.). The Sylvan Stemmed point was found in miscellaneous topsoil. One Normanskill-like point was found in the yellow subsoil (Stratum 2) in the five-foot unit (5A) that contained the burial (see Figure 8). The other was in the topsoil of unit 2A.

Two other projectile points found in the rockshelter may be of Archaic age, but are problematic (Figure 24; e,f). They are both lobate-stemmed, or contracting-based projectile points (they were coded in the lithic inventory as "lobate-stemmed"). One is a coarse-grained chert (Figure 24; e and the other a gray siltstone (Figure 24; f). Funk (personal communication 1988) tentatively identified both of these as Poplar Island points, as defined by Kinsey (1959).

Kinsey (1959) refers to these as "tapered or lobate-stemmed". Although Funk tentatively placed the Poplar Island points in the Late Archaic in his regional sequence (see Funk 1976:195), he admits that they are poorly defined as a type in the Hudson Valley, or the Northeast for that matter (Robert Funk, personal communication 1990). In fact, he is not sure how much of a distinct type they are from Starks (Middle Archaic points as defined by Dincauze [1976b], see also Levine [1987]) or Bare Island points (Late Archaic). So-called Poplar Island points have a very light distribution in the Hudson Valley; a total of 39 are reported for the entire valley by Funk (1976:195).

At the rockshelter, both points were found under the burial. The point illustrated in Figure 24 is a Stark point (Dena F. Dincauze, personal communication 1991) and was found in the dark soil of the burial feature fill, below the human remains. This point may not necessarily have been brought to the rockshelter in the Middle Archaic Period; since it is close proximity to other lobate-stemmed Rossville points, it may have been curated and deposited at the same time. The point illustrated in Figure 24 is Bare-Island-like and was located in the yellow subsoil of stratum 2 (although the field notes indicate that it was still in "disturbed" soil).

Two very Late Archaic-Transitional projectile points were present: a possible Snook Kill or Atlantic point

fragment (cf. Dincauze 1972:42) and an Orient Fishtail (Figure 24; g,h). The former is made of a local gray fine-grained chert and the latter a light blue Onondaga chert, also local. The Snook Kill point was found in Feature 2. The Orient Fishtail was found in unit 5A, the unit containing the burial. The excavators were not sure if this point was in the burial; it was located 8 inches from other points (Middle Woodland Greene points) that they did consider to be in the burial.

Woodland Period Projectile Points. Representative of a Middle Woodland occupation are four Rossville type projectile points (Figure 25; a-d). These points are roughly rhomboidal or lozenge-shaped (Ritchie 1971:46), and are all made from locally available cherts. According to Ritchie (1971:46) their age is very Late Archaic, Transitional and Early Woodland. However, as mentioned in Chapter 2, they are also diagnostic of the Bushkill complex identified by Kinsey (1972).

The Rossville points found at the Goat Island Rockshelter were all found in the vicinity of the burial. One was found in the burial fill, 11" below the surface, in supposed association with the Orient fishtail and the two Greene points. Another was found in the "black soil" or feature fill just above the yellow subsoil at the south end of the burial. Another was found below the burial on the yellow subsoil, and the fourth was found on the surface in

the vicinity of the burial. Rossville points are not well defined for the Hudson Valley (there is a total of 61 for the Hudson Valley as defined by Funk [1976:195]). As will be discussed later in this chapter and in Chapter 4, all of the Rossvilles were apparently in association with ceramics. Therefore, the burial may date to the poorly defined Bushkill complex of the Early-Middle Woodland.

Projectile points from the Middle Woodland include two Greene points, and one Fox Creek Stemmed point (Figure 25; e-g). The two Greene points are made of a brick-red dull Normanskill chert. Outcrops of this type of chert are located within two miles of the site (Christopher Lindner, personal communication 1990). These two Greene points were found lying parallel to one another in the context of the burial; the field notes indicate that the points were "in the humus above, but lying 6 [inches] apart as if placed intentionally" (Figure 20). Greene points are considered by Funk (1976) to belong to the earlier part of the Middle Woodland.

A Fox Creek Stemmed point, made of white quartz, was found on the surface in the vicinity of the burial; it may have been originally in association with the Greene points, which are considered to be contemporaneous (see Funk 1976; Ritchie and Funk 1973). Fox Creek points were originally called Steubenvilles by Ritchie (1971:51) and were thought to date from either late-Paleo or Late Archaic times, until

the recognition by Kaeser (1968) that they belonged to Middle Woodland Period in coastal New York. Fox Creek points were then recognized in New York by Ritchie and Funk (1973), and the Fox Creek Phase was later elaborated on by Funk (1976) (see Chapter 2).

One Jack's Reef Pentagonal Point was found at the site in unit 6A (Figure 25; k). It is made of a gray local chert. Funk believes Jack's Reef points to be from the latter part of the Middle Woodland, but partly contemporaneous with Fox Creek and Greene points (Funk 1976:294).

From either the latter part of the Middle Woodland or the Late Woodland are three triangular points (Figure 25; h-j). These are all made of dark gray local cherts. One (Figure 25; h is likely a Levanna point, and was found on the surface. Two triangular points (Figure 25; i,j) are both excessively re-sharpened and, thus not typeable. One was found 6" below the surface in unit 5B. The other was found below Feature 1 -- the ash pit in unit 4A.

Other Flaked Stone Tools.

Twenty bifaces and biface fragments were recovered, some of which are shown in Figure 26. One cache blade was recovered from Feature 2 (Figure 26; d). It is very thin, finely flaked, and made of Onondaga chert. Although only the base is present, and it is badly pitted, it is possibly a Meadowood type cache blade from the Early

Woodland Period. One expanded-base drill, one asymmetrical drill (Feature 2), three endscrapers (one found in Feature 2), and one drill or perforator were also recovered -- all made of locally available cherts (Figure 27).

Ground Slate Tools.

Two triangular ground slate "points" were found in the rockshelter (Figure 27; b). Since slate is fairly brittle, I am unsure of the function of these items. One of these points was found in Feature 3. Also, a ground slate ulu or semi-lunar knife fragment was found in Feature 2 (Figure 27; a).

Rough Stone Tools.

All of the rough stone tools are fashioned from graywacke, of which the rockshelter itself is made. An abrading stone was made of a water-worn graywacke cobble, and was found in unit 4A in the yellow subsoil below Feature 1 (Figure 28; a). A graywacke flake/knive was recovered from miscellaneous topsoil (Figure 28; c). A bifacially worked piece of greywacke (Figure 28; d) was recovered from the lower level of the burial, in feature fill. A netsinker was found on the surface of unit 6A (Figure 28; b). A natural broken cobble, which may have been used as a pestle or hammerstone, was found in Level 1 of square 7A.

Summary of Lithic Analysis

Analysis of the projectile points was the single most important information used to identify different components

at the rockshelter (Table 5). While one may be quick to conclude a predominance of hunting at the site, I will suggest that many of them were placed in a burial as ceremonial items. The only indication of fishing among the stone tools is one netsinker. The numerous bifaces suggest other activities related to subsistence; however, they cannot be separated by component. Likewise, while different stages of lithic reduction took place at the site, the different components cannot be separated out of the debitage.

Ceramics Analysis

Carlyle Smith did a preliminary analysis of the ceramics in 1940, which provided a count of sherds with various kinds of decoration and temper. However, it was not fine-grained enough to be of much use for the purpose of this thesis. Therefore, I undertook a minimum vessel count by identifying distinct vessel lots. The method I used to do this was inspired by Jane McGahan (1989) who identified vessel lots for the Indian Crossing site in Massachusetts. This method is an application of the technique used by Dincauze (1975), and fitted to the particular collection. Vessel lots are groups of pot sherds which are determined to be minimally from the same vessel. This is not to say that they are from the same vessel -- only that it is possible.

Classification by vessel lots requires the identification of attributes as opposed to the typological

approach. Attributes analysis involves the comparison of classes of artifact features (e.g., surface treatment or decorative technique), whereas the typological approach involves the comparison of classes of artifacts, which are comprised of a complex of attributes (Lavin 1986:3).

Pottery "typologies" in New York State (e.g., Ritchie and MacNeish 1949) have been primarily based on rim counts and decorative motifs. In fact this is not typology at all but a simple descriptive class; it assumes discontinuities, and imposes modalities rather than demonstrating them (Dena Dincauze, personal communication 1988). Funk (1976) also characterizes "vessels" largely on the basis of rim sherds, and sorting by pre-existing "types." In fact, in classifying pottery from the Hudson Valley, Funk (1976:280) selected assemblages based on their predetermined "seriational compatibility" or "fit" with types from western and central New York. Further, to be used in his seriation, ceramic assemblages needed to display a high degree of uniformity (Funk 1976:280). In this process, variation will logically be suppressed, and uniformity with central and western New York will be a predetermined outcome.

When we use analyses of attributes rather than "types" (see Dincauze 1975; Kenyon 1979) vessels, rather than individual sherds, represent the unit of analysis (Petersen 1985:10). In this way we can approach inferences of site activities and the post-depositional history. By creating

analytical classes, one can study processes of variation and change.

The total number of sherds from the rockshelter was 527. I used 376 of these in my analysis; sherds that did not have intact exterior and interior walls were not used in my vessel lot determinations, since important attributes on these could not be discerned. A minimum of seven attributes were recorded for each sherd (two more for rim sherds) to determine vessel lots: modal thickness in millimeters (most frequent measurement as opposed to average); temper material (by 10X microscopic analysis); temper size using the Wentworth scale (in Shepard 1956:118); temper density by percentage (after Spock 1953:27-36); interior and exterior color by Munsell Color chart (Anonymous 1975); exterior and interior surface treatment/decoration; location of the sherd on the vessel; and, in the case of rim sherds, the rim form (i.e., inverted, everted, straight, castellated) and lip form (flattened, pointed, rounded, thickened) (Table 6). After recording data on all of the above variables, I could make a final vessel lot determination on the basis of overall similarity. This final determination was, admittedly, partly subjective. I tended to err on the side of including a sherd with a vessel lot, since this was to be a minimum vessel count.

Temper material and density were by far the most important in the determination of vessel lots. It was also

the most difficult and time consuming to determine.

"Temper" is perhaps the most used and abused term employed in archaeological descriptions of pottery (Rice 1987:406). It refers generally to the coarse components in a paste, presumed to have been added by the potters to modify the properties of the clay (Rice 1987:406). A variety of substances may be added to clay for these purposes: plant fibers, shell, dung, crushed rock, sand, volcanic ash, or ground pot sherds (referred to as grog) (Rice 1987:407). These materials, when added to the clay, may affect plasticity or stickiness of the clay, reduce shrinkage in drying, lower the vitrification point in firing, or increase the strength of the resultant vessel (Rice 1987:408).

For this vessel lot analysis it was not necessary to distinguish between natural and added substances; quartz, calcite, shell and mica often occur naturally in clay deposits (Rice 1987:409). Temper was identified by macroscopic means (i.e., "eyeballing") using a 10X scope. The identification is consistent, if not exact. For example, a series of dark black/red metamorphic rock fragments often containing feldspars were grouped together. These could have been more precisely identified by thin-section; however, for the purpose of determining vessel lots this was neither feasible nor necessary for all of the potsherds.

William Kelly and his assistants, of the Geological Survey of the New York State Museum, thin-sectioned three pot sherds from three separate vessel lots. I was then able to contrast these petrographic analyses with my macroscopic temper identification. A thin-section was produced by first impregnating a pot sherd with an epoxy resin in order to stabilize the sherd. Next, the sherd was affixed to a glass slide, and cut with a thin saw. The slide mount was then ground with a diamond surface to reduce the thickness to 30 microns and then covered with a thin glass cover. They were then examined under a petrographic microscope using polarized light to determine the types of minerals present. The results of the individual thin-sections are discussed for each vessel lot below.

A total of twenty four vessel lots were discriminated. Of these vessel lots, some were represented by many sherds and others by only one or two (Tables 6 and 7).

Vessel Lot 1

Vessel Lot 1, with 172 sherds, constituted 46% of all of the sherds analyzed. The pot was partly reconstructed in 1939, and although I did not attempt further reconstruction, it appears to have been whole at the time of deposition. Part of this vessel is shown in Figure 29. Most of this vessel lot (107 sherds) was found in the burial (Figure 30) with the rest found scattered throughout the rockshelter (Table 7). Therefore, the burial seems to have been

disturbed prior to the Butler excavation, although most of the burial and associated vessel remained intact.

The rim of vessel lot 1 is dentate-stamped, which, to judge by the repeating pattern, was made with a seven-toothed comb-like implement, possibly of carved bone, wood or shell. The same implement seems to have been used to scrape the interior and exterior body of the vessel, as indicated by the width of the channels. Scraping is done during pottery manufacture, usually while the clay is wet, to thin the walls and remove surface imperfections (Rice 1987:137). Scraping with a scallop shell produces a similar surface sometimes described as channeling (Ritchie 1969b:111). This roughening of the surface may provide a better grip on the exterior of the pot, and may also improve heat transfer in cooking (Rice 1987:138).

The temper of this vessel lot is mostly grit (crushed feldspar and quartz) with a small percentage of small, fine-grained chert flakes. Some of the chert flakes are obviously pressure flakes since they have previous flake scars. Others seem to be shatter or crushed chert. The thickness of the vessel is relatively thin (6-9mm).

The vessel orifice diameter was approximately eight inches, determined by fitting the arc of the rim to a curve. The lip of the vessel is everted and flattened. On the basis of the curves of body sherds, the vessel base was conoidal. Soot is deposited primarily on the sides of the

vessel up to the rim, with an oxidized area in the center of the base, indicating that the vessel was set into a fire (Rice 1987:235). The interior of the vessel has charred deposits -- possibly food remains. Since charcoal and ash were found in the soil above the burial (soil within the burial was not described except for being "dark"), it is possible that the pot was set into the burial and a fire built as part of an offering.

Judging from the method of decoration (dentate stamping), scraped surface treatment and relatively large temper, this pot was likely made during the Middle Woodland Period. It is most similar to the Vinette Dentate type of Ritchie and MacNeish (1949:100). However, it also closely resembles decorative techniques (dentate stamping) from Southern New England (see Wiegand 1987:27) and coastal New York (see Juli and McBride 1984; McBride 1984; Smith 1950).

Vessel Lot 2

This vessel lot contained 18 sherds, 13 of which (72%) were found in Feature 2 (a refuse pit located along the back wall of the shelter). The interior and exterior surfaces are smooth. A fine wiping is evident on some sherds. No decoration is evident and the sample contains no rim sherds. The temper is predominantly large pieces of crushed white quartz.

Vessel Lot 3

This vessel lot contains 46 sherds, of which 39 (85%) were in Feature 2. This vessel was smoothed, with some fine wiping on the interior and exterior, similar to vessel lot 2. One sherd which appears to be a rim sherd is also undecorated. The exterior has a reddish color which seems to lie on the surface and is not baked into the clay; this may be a hematite or clay wash of some kind. One sherd is so bright in color as to almost suggest a purposeful painting of the vessel (Cat. #57a22).

The temper is mostly large fragments of crushed feldspar, with some quartz and mica, and is quite dense. The walls are fairly thick (8-12mm). There is some charring on the interior of some sherds, perhaps the remains of cooking.

A sherd from this vessel lot was thin-sectioned by the New York State Museum (as described above). This sherd contained temper comprised mostly of three different crushed rocks: two were high grade metamorphic (one of which contained garnet), and the third was a meta-quartzite. The nearest source of high grade metamorphic rocks is the Adirondack Mountains, in the Lake George region of New York. These rocks may have been transported to the vicinity of the site by either glacial or alluvial processes. There were also some grains of potassium feldspar, plagioclase, and some fine grained, freshly crushed quartz. This indicates

that the potter was selecting at least four different rock types to crush and use as temper, in this one pot alone.

Vessel Lot 4

Vessel Lot 4 contains 14 sherds which do not seem to have been clustered in any particular provenience (Table 7). The surface treatment is mostly smooth; however, two sherds have cord-marking.

The temper is mostly quartz grit with a little feldspar and chert grit. The temper in this vessel is less dense than in most of the other vessel lots in this analysis (10%). The thickness of this vessel lot is 8-9 millimeters.

Vessel Lot 5

This vessel lot contained 28 pot sherds, seven of which were found in the burial, eight in Feature 1, and one in Feature 2; the remainder were in the upper level and on the surface above these features. The surface treatment is smooth; some of the sherds exhibit fine wiping. The decorations are both pseudo-scallop shell and rocker dentate (Figure 31). These decorations do not seem to be limited to the rim of the vessel. Although these two decorations do not appear on any one sherd together, the sherds with these decorations are mutually indistinguishable except for the decoration. Both of these decorations may have been produced by stamping with a modified freshwater clam shell (see Arthur 1973) which would have been locally available.

Many of the sherds exhibited coil breaks. The lip was apparently straight/pointed and castellated.

Vessel Lot 6

This vessel lot contained 30 pot sherds. Eleven of these were found in the topsoil of units 3A and 3B. Eight sherds were found in "miscellaneous topsoil." Two sherds were found in the burial, and one sherd each in Features 1 and 2. From this vessel lot there are two rim sherds, one neck sherd; the rest are body sherds. The surface of the vessel lot was smoothed, with some fine wiping evident. Two sherds were dentate stamped.

The lip appears to have been straight and rounded. The temper is mostly quartz sand with a little feldspar. The superficial reddish color on the interior and exterior of this vessel lot may be indicative of a clay or hematite wash.

Vessel Lot 7

Vessel Lot 7 contained 25 sherds which were not clustered in any particular feature or unit. One sherd was in the burial, seven in Feature 1, and six in what was termed by the excavators the "fireplace" which means either Feature 2 or 3. The surface was fabric-impressed. I do not consider this fabric impression a decoration, since it was not limited to any particular portion of the vessel. Rather, it is a surface treatment that is evident on body, neck and rim sherds. The interior of the rim is also fabric

impressed. The fabric appears to have been a loose twined weave, as shown by clay impressions (Figure 32 and 33).

The temper was mostly feldspar grit with some quartz and chert.

Vessel Lot 8

This vessel lot only contained eight potsherds. However, seven of these were mended together by the Butler crew in 1939. Five of the eight potsherds were found in the burial. The exterior surface treatment/decoration is coarse-twined fabric-impressed (Figure 34 and 35). It is sometimes difficult to distinguish fabric-impressing from cord-marking, since they are closely related techniques (Quimby 1961:426). In this case, however, both warp and weft strands are visible in the positive clay impression (Figure 35). It is difficult to tell, in this case, if the impressions are a decoration or surface treatment since only the rim is present. The interior of the rim also has the same impressions. The rest of the interior is smoothed/wiped. The rim is slightly everted and rounded. The orifice diameter is 10 inches as determined by curve-fitting.

The temper from this vessel lot was quite problematic at first; it seemed to be mostly crushed feldspar and quartz. However, much of the temper had obviously leached out, leaving only 4-5mm blocky holes. At first it was thought that this represented shell or some other organic

material. The thin-sectioning process allowed us to identify the "mystery" temper as a carbonate rock, either calcite or dolomite. Veins of this rock occur in limestone and would have been locally available (William Kelly, personal communication 1990). Other temper materials identified in the thin-section were quartz grains, most likely from crushed quartz or quartzite, and a few pieces of grog (recycled potsherd).

Vessel Lot 9

This vessel lot contained seven sherds, four of which were in Feature 1 and one of which was in Feature 2. All of the sherds were body sherds. The interior and exterior were scraped in a haphazard fashion. The temper was identified macroscopically as feldspar and very little chert.

As a result of thin-sectioning, William Kelly identified the temper as two different crushed rocks -- high-grade metamorphic rocks that are foreign to the area of the site. One of these is an Adirondack type metagabbro. They may have been transported by glacial or alluvial processes to the Hudson Valley. Again, the implication of this is that the potter was selecting and preparing more than one rock type to use as temper.

Other Vessel Lots

All of the vessel lots discussed so far apparently date to the Early and Middle Woodland Periods, on the basis of temper size, wall thickness, surface treatment and

decoration. In general, ceramics of the northeastern Middle Woodland period have larger temper, and wall thickness (Braun 1983) and were fired at a lower temperature than those of the Late Woodland Period..

The remaining fifteen vessel lots constitute only seven percent of the total sample used in the vessel lot analysis. Many of these vessel lots have only one sherd. Rather than go over these individually I will summarize here three of the more interesting (for details see Table 6).

Vessel lots 12, 18 and 20 have decorations indicative of the Late Woodland Period (Figure 36). Vessel Lot 12 includes a rim sherd with incised lines in a pattern similar to Chance Incised (a Late Woodland Iroquois type defined for western and central New York; see MacNeish [1952]; Ritchie and Funk [1973]) or Durfee Underlined, which date to about 1,200 to 1,400 A.D. (Lenig 1965). Hetty Jo Brumbach found that many "Mohawk" types were also non-Mohawk types (i.e., Algonquian). She suggests that shared ceramic technologies may be an indication of an "interaction sphere" rather than an indication of prehistoric tribal boundaries (Brumbach 1975:28).

The orifice diameter for Vessel Lot 12 is 6 inches, which is relatively small. Vessel lot 18 is a notched neck sherd and belongs either to a very small vessel or a pipe. Vessel lot 20 is a notched and incised shoulder-herd. It, too, is either from a small vessel or pipe. These three

Late Woodland vessel lots exhibit thin walls, relatively fine temper, and a hard paste, perhaps indicating a higher firing temperature than the Middle Woodland vessel lots. They apparently were hand-built but not coil-made. They were also fired in a reducing environment as opposed to an oxidizing environment, since they are black as opposed to red or tan. These attributes are consistent for what we know of Late Woodland ceramic technology.

Summary of Vessel Lot Analysis

It is striking that of 24 vessels lots, only three can be attributed to the Late Woodland period. The Late Woodland sherds likely broke off pots carried into the rockshelter; the rest of the pot was then taken away. For the Middle Woodland, pots may have been deposited whole, or nearly so, in the burial and in Feature 2 (trash pit).

There were minimally ten prehistoric components at the site, determined by analysis of diagnostic materials (primarily lithics): (1) Middle Archaic Stark component, (2) Otter Creek Phase, (3) Sylvan Lake Phase, (4) Bare Island component, (5) River Phase, (6) Snook Kill Phase, (7) Orient Phase, (8) Bushkill/Fox Creek Phase, 9) Fourmile Phase, and (10) Chance Phase (Table 5). A discussion of the artifactual, faunal and osteological remains in relation to cultural features at the site appears in Chapter 4.

Human Remains

The remains of one individual were found in the rockshelter. A total of 121 bones and bone fragments were recovered. A significant portion of the human remains was culled from the faunal assemblage at the start of this thesis project. Most of the bones excavated (58%) were identified as being within the burial feature. However, the excavators apparently did not recognize the remains from the same individual in other excavated contexts (Table 8; Figure 36).

The condition of the bones varies from fair to very poor. Gnaw marks of a small rodent-like animal were present on a few bones, indicating post-depositional disturbance. Pelvic fragments, usually quite sturdy, were totally absent. Femur, tibia and humerus, which are relatively dense bones, were in very poor condition, where present. However, rib fragments and phalanges (fingers and toes), which are thin and prone to decomposition, were numerous and in fair/good condition. This is likely due to both differential preservation within the burial feature and disturbance of the burial, causing many of the bones to have been brought to the surface where rapid decomposition would take place.

The individual was presumably Native American, to judge from the cultural affiliation and age of the grave goods and the presence of one shovel-shaped maxillary incisor (Figure 37; a). This tooth alone would not be enough to make this

determination; shovel-shaped incisors occur with high frequency in Chinese, Eskimo, and American Indian populations, and with low frequency in American Black and American White groups (Dahlberg [1951] in Bass [1971:236]).

Sex determination of the individual is inconclusive; the pelvis, which is missing in this case, provides the most abundant and accurate data for sex determination (Ubelaker 1978:42). The individual was likely male as determined by a few less reliable criteria. Although none of the long bones are whole, the left radius and right ulna, which are in better condition than most, are quite large and rugged. The bones of males tend to be larger and more rugged, although this criterion should be applied with caution (Ubelaker 1978:41). The individual was muscular; there are pronounced muscle attachments on the proximal end of the ulna and along the phalanges of both hands, indicating that this person worked quite a bit with his or her hands and arms.

The individual was an adult at the age of death, since all of the bones present were fully fused. Normally, all bones are fused by the time a person attains the early twenties (Bass 1971:17). Since there were no cranial or pubic bones present, I relied on degenerative changes to estimate age at death; degenerative changes in the skeleton only serve as very general indicators of age (Ubelaker 1978:60). There was no indication of vertebral osteoarthritis. However, only four vertebral fragments were

precisely identified, and the degree of variability within populations limits the usefulness of this feature for aging single specimens (Ubelaker 1978:61). Although tooth wear is not a reliable indicator of age in the absence of other evidence (Ubelaker 1978:64), it is the best evidence we have in this particular case. Six teeth of the individual were recovered. The three molars show very pronounced and unequal wear on the tooth surfaces (Figure 37; b-d). Wear results from chewing and generally proceeds continuously throughout life (Ubelaker 1978:63). On the basis of D. R. Brothwell's (1965) age classification of pre-medieval British teeth, the molars from the individual from Goat Island would fall into the latter part of the "45+ years" age period. However, there are both individual and group differences in tooth structure and diet which contribute to the rate of wear. For example, hunter-gatherers are presumed to have had more gritty diets and thus would have more tooth wear, on the whole, than horticulturalists. From what we know of prehistoric diet, this individual should fall into the category of hunter-gatherer, and therefore may actually be younger than the 45 years inferred from tooth wear.

There was skeletal evidence of at least one trauma in this person's lifetime: the spine of one of the thoracic vertebrae was apparently broken at one time and had fully re-fused (Figure 38). This likely caused the person great

pain at the time of the trauma, and, perhaps, even for the remainder of his or her life.

Historic Artifacts

Forty-six historic artifacts were recovered from the rockshelter. Unfortunately, the excavators did not record specific provenience for most of them. Most of the historic artifacts are only identified as having been from "miscellaneous topsoil" (Table 9). Nevertheless, some interpretation can be made of the historic-period uses of the rockshelter.

Seventeenth-century artifacts include a gunflint (a stone used in a spring-driven firing mechanism to ignite powder), a Dutch clay pipe with an "IW" or "JW" makers mark, and, possibly, a fragment of redware (Figure 39; b,d,f). The gunflint is made of a locally available very dark gray/black chert. It is 29 millimeters in length and is bifacially worked. In both material and lithic technology it is very similar to Native American gunflints described by Witthoft (1966) and Kent (1983). Therefore, this artifact may indicate a historic Native American use of the rockshelter during the seventeenth century. These bifacially worked gunflints are quite different from the unifacial, commercially available, standardized gunflints that were available to Euro-Americans after 1640 A.D. The earliest documented occurrence of bifacial gunflints in the Northeastern United States is just after 1620 A.D. (Witthoft

1966:22). The Native manufacture of bifacial gunflints decreased after 1675 A.D. and by 1700 A.D. they were quite rare (Kent 1983:34). According to Witthoft (1966:16): "...eastern Indians were armed to the teeth with flintlock weapons before 1650."

Another seventeenth century artifact was a clay tobacco pipe bowl with the makers mark "IW". The bulbous shape of the bowl indicates that it dates from the seventeenth century (Noel Hume 1970:303), and is almost certainly Dutch (Paul Huey, personal communication 1990). There were a number of Dutch pipe makers in the seventeenth century with initials of either "IW" or "JW" from the 1630s to 1670 (see Davey 1981). Clay pipes from New York State have been found with an "IW" mark; these examples have a seven-pointed star above the initials and likely date to the third quarter of the seventeenth-century (Bradley and DeAngelo 1981; McCashion 1975). The star may have been added later to distinguish it from the earlier "IW" mark (Paul Huey, personal communication 1990). Therefore, the pipe from the rockshelter may be slightly older.

Numerous other white clay smoking pipe fragments were recovered from the site (29 total). The stem bores range from 4/64 to 7/64 inches, as measured by wood drill bits (Figure 40). On the basis of bore sizes, there are minimally four pipes represented in the sample. Although there are certainly problems with using pipestem bore size

for dating archaeological sites (see Alexander 1983), some generalizations can be made. In general, larger bore sizes were produced earlier; since the length of pipestems increased over time, a smaller wire was required to produce the bore (Noel Hume 1970:297). Using Harrington's date brackets (Figure 41), the pipes from the rockshelter range in time from the early to mid-seventeenth to the late eighteenth century.

Artifacts which may date to the eighteenth century include a piece of dipped white salt-glazed stoneware, which dates from 1710-20 (Noel Hume 1970) (Figure 39; e), a clay pipe bowl that likely dates from the late 18th to early 19th century (see Noel Hume 1970:303) and four machine-cut nails with wrought heads (late eighteenth to middle nineteenth century). A buckle fragment may also date to the eighteenth century (Paul Huey, personal communication 1990).

Other historic artifacts that cannot be dated include a piece of carved ivory (Figure 39; i), two pieces of glass, three pieces of cut brass (Figure 39; g) and a possible lead fishing weight.

Minimally there were three historic components at the rockshelter, from the seventeenth, eighteenth and nineteenth centuries (Table 5). The historic artifacts indicate short, sporadic occupation of the rockshelter, likely by both Native American and Euro-american groups. It is likely that the occupations were small encampments for short periods of

time. Since the view up and down the valley is spectacular from the island, it would have been a good location for an encampment in the strategic location between New Amsterdam and Fort Orange during the seventeen century.

Faunal Remains

The remains of numerous birds, reptiles, fish, shellfish and mammals were recovered from the rockshelter. Unfortunately most of the remains were cataloged as either "miscellaneous topsoil" or were not identified at all as to provenience. Catherine Carlson, a graduate student at the University of Massachusetts, Amherst, identified the bulk of the faunal remains, with the assistance of David Steadman of the New York State Museum for some problematic specimens. Eight species of mammal, six species of bird, two species of reptile and four species of fish were identified (Table 10).

Only a few artifacts of bone were recovered from the rockshelter: a broken bone awl and an antler punch (unit 3A), a possible antler punch in Feature 2, and a bone awl and antler punch from "miscellaneous topsoil." The antler punches are worn and may have been used for stone-knapping. The two awls are slightly polished and may have been used for basket-making and/or a variety of other tasks.

Mammals

The most numerous species of mammal was the white-tailed deer (Odocoileus virginianus); over a thousand bones and fragments were identified, weighing over two thousand

grams (Table 11). The more numerous deer remains may in part be due to differential preservation afforded to larger and more dense bone. The individuals represented were apparently both sub-adult and adult. Although most of the deer were not identified as to provenience, there were deer remains identified for Features 1 and 2. Feature 1 also contained one bone of an elk and a few raccoon bones. Not all of the mammal remains were necessarily deposited by human activity; many animals may have lived and died in the rockshelter in between human habitations, especially the rabbit, squirrel, raccoon, bear, and bobcat. It is unlikely that deer would have inhabited the rockshelter, due to its precarious location. Two bones from a large dog were recovered.

Birds

Bird remains were less numerous, numbering 68 specimens (six species) (Table 12). Most of the bird remains are of unknown provenience. However, turkey, duck, and dove/pigeon were identified in Feature 2, and duck and bird remains were identified for Feature 1.

Fish

Considering the fragility of fish bones, and the excavation techniques employed (i.e., mattock and shovel) it is a wonder that any were recovered from the site. Fish bones are rarely preserved in the Northeast, except for those of large sturgeon (Brumbach 1986:37). Some sculpin

and perch was identified for Feature 1, and a sturgeon bone was recovered from Feature 2 (Table 13). The rest of the fish remains are of unknown provenience, and include striped bass, yellow perch, sculpin and sturgeon. Some of the fish remains may have been brought in by other animals (e.g., raccoon, bear).

Unlike the abundance of projectile points as evidence of hunting, few artifacts were recovered from the site to indicate fishing. This is generally true of Hudson Valley sites; Funk (1976) quite often concludes a predominance of hunting based on a majority of lithic artifacts presumed to be indicative of hunting and related activities. The relative scarcity of artifacts related to fishing can be explained if one assumes a technology based on the use of natural barriers or the construction of weirs and traps (Brumbach 1986:39). Shallows, which are presently associated with the site, function like man-made traps and impede the progress of schooling fish (Brumbach 1986:39). Perishable artifacts such as nets may also have been used for fishing.

Reptiles

The reptile remains from the rockshelter include two species of turtle (Table 14). A few fragments of each of these were found in both Feature 1 and 2.

Shellfish

A small amount of shell was recovered from the site; most of it was freshwater clam (Elliptio complanata) (Table 15). Of this species there were 14 whole valves and 73 fragments. Today, this species is quite numerous in the area. Strayer (1987) reported, in a study of the freshwater mollusks of the Hudson Basin, that Elliptio complanata was the most abundant and widespread unionid in their 1985 survey. However, this species requires a hard substrate and at least 1.5-3 meters of water (Bethia Waterman, personal communication 1990). There is a "shell heap" site on the other side of the island which also contains Elliptio complanata; it appears to have been utilized in both Archaic and Woodland Periods. However, due to accelerated siltation of the Tivoli Bays, this species does not apparently inhabit the east side of the island; the substrate is too soft and the water too shallow (Bethia Waterman, personal communication 1990).

Freshwater mussel acquisition, like fishing, may not have necessitated the use of specialized equipment. A common method of obtaining freshwater mussels from rivers in historic times was to drag a branch behind a boat or canoe (Bethia Waterman, personal communication 1990). The mussels, which feed with their shells open, close when the branch passes and cling on as the branch is pulled up. This method would have been plausible for most of the year as

long as the river was not frozen. This activity would not leave any remains, per se, in the archaeological record.

Also present at the site were nine fragments of another freshwater mollusk that I could not identify, an unidentifiable snail, and numerous specimens (45) of the White-lipped forest snail (Triodopsis Albolabris Say; see Jacobsen and Emerson 1971). This species has a high frequency in a deciduous forest and a low frequency in coniferous or mixed (Barber 1986). Although Barber (1986) demonstrates the usefulness of land snails for paleoenvironmental reconstruction, unfortunately, for this particular site, the snail's original context within the site is unknown.

In the next chapter I will synthesize this diverse set of data with respect to the cultural features at the sites, and provide a summary for the sequence of occupation.

CHAPTER 4

INTERPRETATIONS

Cultural Features

"To refer to what we have gotten as a handful of culturally unassignable material from many components, Bill my boy, is to rouse the old Butler blood with a fighting cry." [Mary Butler in letter to William A. Ritchie, June 20, 1941]

The material from the Goat Island Rockshelter is, to be sure, from many components. However, it is far from "culturally unassignable," as stated in the letter above -- thanks to the knowledge of Hudson Valley prehistory that we've gained over the past fifty years.

In Chapter 3, the artifacts from the rockshelter were identified as having come from a minimum of ten prehistoric and three historic components (Table 5). In this section I will relate those components to the cultural features at the site.

Feature 1

Feature 1 was identified by the excavators as an ash pit. It started about 1 inch below the surface in square 4B (Figure 8) and continued to a depth of 16 inches. The notes indicate that it was a "bed of almost pure ash." There were small bone fragments in the last 10" and apparently "hand-carved stakes" at 7-8 inches below the surface. These

stakes are not in the collection, but were described as 1/2 X 1/2 inches (no length given).

Prehistoric artifacts found in the feature included a few sherds of various vessel lots (see Table 7), two bifaces, three flakes, and one projectile point. Historic artifacts found in the feature included a piece of cut brass, one piece of redware (possibly seventeenth century) and one pipestem, all of which were found in the lower levels of the feature. Therefore, this was likely a historic Native American or Euro-American feature which had intruded into and disturbed prehistoric remains. In the feature were also remains of deer, elk, raccoon, duck, bird, sculpin and perch. Although Butler's crew identified this feature as an "ash pit", I believe that it was a hearth and that some of these faunal remains belong to the feature.

Feature 2

The second identified feature consisted of "black " soil, and was considered to be a second firepit. It was located north of Feature 1, in units 2-4A (Figure 8), along the back wall of the shelter. According to the field notes, it contained a great quantity of animal bone. However, as catalogued, only the following could be identified as having come from the feature: one fragment of turtle, one fragment of sturgeon, nine fragments of turkey, duck, dove/pigeon and other bird, 16 fragments of deer (including a possible antler punch and two other antler tine fragments) and 68

fragments of unidentified large mammal (Table 10-15). Much of the faunal material that was catalogued as "miscellaneous topsoil" may have come from this feature.

Most of the flakes that still exist in the collection came from Feature 2 (67%). Only one of these 112 flakes was potlidded. Therefore, I don't think that there was in situ burning in this feature. Other artifacts in the feature included the cache blade, two drills, three endscrapers, an ulu fragment and most of vessel lots 2 and 3 (72% and 85%, respectively). Both of these vessels were smooth with no apparent decoration. However, the walls of the vessels were relatively thick and the temper coarse. Therefore the vessels likely date to the Middle Woodland Period. No historic artifacts were found in this feature.

Although there were no truly temporally diagnostic artifacts in this feature, I believe that it is a trash pit that likely dates to the Middle Woodland, on the basis of the ceramics, as stated above. Some of the artifacts (e.g., the ulu fragment) may have been disturbed from earlier components in the rockshelter.

Feature 3

This feature was characterized by an area of "burnt orange soil" according to the field notes. It was located west of the burial, and south of Feature 1 in unit 5B and 6B (Figure 8). At 11" below the surface, the excavators encountered an ash-filled postmold in the center of this

feature (Figure 8 and 22). The burnt soil and post mold continue down another 17 inches. The post was approximately 6 inches in diameter.

The field notes indicate that only a few flakes were found in the feature and that no charcoal, ash or other material was encountered. However, artifacts catalogued as having been from Feature 3 include two bifaces, and a ground slate triangular "point." There are two flakes catalogued as having come from the "fireplace level," which may refer to Feature 3, since the notes indicate a few flakes for the feature. Two fragments of deer were also identified for the "fireplace level".

It seems likely that this feature was indeed a "fireplace", considering the burnt soil. The post may have been stuck into the fire as a means of roasting or hanging a pot. Since ash remained in the postmold, the post apparently burnt in place. No diagnostic artifacts were found in the feature; however, since no historic material was found, it was likely prehistoric. It is important to note that this hearth is situated toward the open end of the shelter, right along the drip line (Figure 8). In fact the post mold is also exactly on the drip line. For a similarly placed feature at the Powissett Rockshelter in Massachusetts, Dincauze and Gramly (1973:49) note:

By situating the hearth toward the open side of the rockshelter, the firebuilders in effect created half a small wigwam at the site...This arrangement is the most

efficient one possible in respect to smoke dispersal, heat reflection...and the exclusion of outside drafts....

Such an arrangement may be exhibited by Feature 3.

Burial

The burial was located against the back wall of the rockshelter, in squares 5A and 6A (Figure 8 and 20). The field notes indicate that the burial was in "dark soil" in a rock pocket that was underlain by yellow subsoil. The humus above the burial contained ash and charcoal. According to the field notes, two Greene points (made of red Normanskill chert) were found in the humus above the burial, "lying parallel 6" apart as if placed intentionally." The burial itself started at nine inches below the surface. The notes do not indicate the maximum depth of the burial. However, the maximum depth of the soil in the rockshelter, according to the profile drawing, was 30 inches. Pottery was noted within the burial. From the photographs (Figure 30) and artifact catalog, it seems that vessel lot 1 (dentate stamped) was located almost entirely within the burial (Figure 29), as well as much of vessel lots 5, 8 (pseudo-scallop shell and rocker dentate, and fabric impressed, respectively).

The bones within the burial were in poor condition; many bones were either missing or out of place; only 58% of the bones identified as being from one individual were recorded as having come from the burial feature -- the rest

were scattered throughout the rockshelter (Figure 36). Gnaw marks on some of the bones further indicate disturbance of the burial. Dr. Butler indicated in a later publication on two Lenape rockshelters in Pennsylvania (Butler 1947:247), that the burial at the Goat Island rockshelter was "badly disturbed." I do not think that this burial had been intentionally looted. It was likely disturbed quite unintentionally by later occupants of the rockshelter over the past two thousand years. Analysis of other artifact material in the rockshelter indicates that later Native American groups and Euro-American groups occupied the shelter, and built at least one hearth (Feature 1). Since the shelter is quite shallow, any occupation of the site would have disturbed archaeological remains. Also, animals may have occupied the shelter between periods of human habitation and caused further disturbance. Since the burial was in a rock pocket, bones would have been susceptible to differential preservation depending on moisture and depth from surface.

Other artifacts from the burial include a bifacially worked piece of graywacke, three chert flakes, two lobate-stemmed points (one was found on the surface above the burial), and four Rossville points (one on the surface above).

Since the Rossville points all cluster around and in the burial and were in association with dentate stamped,

In this table I use periods rather than stages. Although these terms are often used interchangeably, "periods" should be used to construct chronology, while "stages" define cultural development (Willey and Phillips 1958:65-6). Therefore, periods are linked to chronometric dates while stages are time-free in any absolute sense. In the only extant synthesis of New York State prehistory, Ritchie (1969a) did not offer a scheme of time-free stages, but explicitly utilized a historical-developmental framework that consisted of stages partly anchored by chronometric dates (Funk 1984:138). Funk (1976) continued the use of this scheme in his synthesis of Hudson Valley prehistory, although he has since become less comfortable with it.

A few other terms need to be defined here. A component is defined as "the manifestation of any given focus at a specific site" (McKern 1939:308). A complex is a minimal cluster of cultural traits (Funk 1984:137). A phase is an archaeological unit possessing distinguishing traits, spatially limited to a certain locality or region and chronologically limited to a relatively brief interval of time (Willey and Phillips 1958:22). Therefore, a phase is comprised of a number of components; the term "focus" was abandoned some decades ago.

Evaluation of the Framework

Archaeologists are increasingly concerned with anthropological questions about past lifeways and cultural

stemmed and lanceolate points) then the so-called hiatus in the Early Woodland period in the valley (3000-2500 B.P.) will be resolved. To uncover this evidence, archaeologists need to be sensitive to treat Early and Middle Woodland ceramics as vessels, and not be anxious to fit sherds (or projectile points) into pre-existing typologies. Some of this new information may be gleaned from the other 44 sites investigated by Butler.

Relation to Other Goat Island Sites

Two other sites on the Island were also tested by the Butler crew: the Goat Island Campsite and the Goat Island Shellheap (Figure 4). These sites were only partially excavated. Therefore, the Butler collection from these multicomponent sites is a small sample. I did not analyze the collections from these sites. However, even my very general observations from these sites warrant consideration here.

As stated previously, the Goat Island Campsite is a large and extremely productive site, and continues to be ravenously looted today. While Butler referred to this site as a "campsite", it is more likely a very large, multi-component habitation site, with associated middens. My observations from a walk-over of the site in 1990, lead me to believe that most of the level part of the island is rich in archaeological remains. Therefore this "campsite" is likely only a small window into some of the numerous

occupations in the center of the island. The Butler excavation recovered over 5,000 pieces of debitage from this site, comprised mostly of local cherts. Other artifacts included one potsherd (plain and thin -- possibly Late Woodland), two Orient Fishtail points, five other untyped points (one corner-notched, four stemmed), two red hematite nodules and a Herkimer diamond.

The Goat Island Shellheap is located on the southeast part of the island (Figure 4). The Butler excavations at the Shellheap consisted of two trenches, intersecting at right angles, approximately 21 X 3 feet and 1 foot deep. This site also contained thousands of chert flakes, seven Herkimer diamonds, and numerous ceramics (mostly Late Woodland). Projectile points included three Normanskills, six Sylvan Stemmed and one Levanna, two Orient Fishtails, one Meadowood-like, one possible Meadowood cache blade, one Adena point and seven untyped stemmed points.

Although these sites cannot be examined in detail here, it is obvious that both sites are multi-component, and that different components are represented at these sites than for the rockshelter. For example, no substantial amount of Middle Woodland pottery was in the collections for the other island sites. Also, while Late Woodland ceramics predominate in the Shellheap, very few Late Woodland sherds were found in the rockshelter. It is possible that the Shellheap, at least in part, represents a midden for

habitation on the island during the Orient Phase, River Phase and the Late Woodland Period. Whereas, the Rockshelter, while being occupied sporadically over the past several thousand years, was most extensively utilized during the Middle Woodland, as exhibited by the burial and Feature 2. The Middle Woodland presence on the island was apparently sporadic, in contrast to more substantial occupations earlier and later.

Sequence of Occupation

The artifacts within the rockshelter indicate that the only major use of the site occurred during the Middle Woodland, which is represented by a burial which likely contained much of the pottery and projectile points from the site. Other remains indicate short, sporadic occupations by Native American and Euro-American (Table 5). Activities represented included fishing, hunting, flint-working, cooking and ceremonial activities (burial). Season of occupation cannot be determined for the various components. However, all seasons are represented in the faunal remains (Catherine Carlson, personal communication 1990). Contrary to the model presented by Funk (1976) for low-lying sites on the Hudson (see Chapter 2, p.45), the Rockshelter did not produce much evidence of fishing gear (one net-sinker). However, as stated previously, prehistoric peoples may have been relying on shellfish, the remains of which are not

found within the rockshelter, but elsewhere on the island (e.g., the Goat Island Shellheap).

Evaluation of Butler's Field Methods

Ritchie and Butler's approaches to archaeology were quite different. Ritchie focused on key sites, and opened up long trenches -- the goal was the profile. He was most concerned with sites that had deep, stratified middens. In Ritchie's approach to archaeology in the 1930's and 40's, all sites were virtually equivalent.

Butler, on the other hand, approached archaeology spatially, at least in the Hudson Valley. During the two seasons of the Hudson Valley Archaeological Survey she recorded and excavated many sites from a large geographical area -- the entire Hudson Valley. Presumably, she felt that sites would vary a great deal over space, an idea that was ahead of her time.

Ritchie excavated trenches in arbitrary levels, and then analyzed the artifacts as having come from a given seemingly two dimensional level (see Ritchie 1932, 1940). Although this method was not unusual in the 1940's, today we realize that the archaeological world is actually a three dimensional, very complex puzzle. It was not until the 1960's (see Ritchie and Funk 1973) that Ritchie integrated the analysis of features and settlement patterns.

Butler, on the other hand, excavated the Goat Island Rockshelter by soil level characterized by color zonation.

This distinction may be less arbitrary than Ritchie's levels. However, it is not necessarily more appropriate. In either case the remains collected cannot be related to cultural site formation or depositional history.

Nevertheless, Butler did record the provenience of artifacts in relation to cultural features and, for the most part, within five foot excavation squares. This provided the most useful information for the purpose of my study, and was apparently more exact horizontal control than was normally used in archaeology in New York State at the time (cf. Ritchie 1932, 1940). Nevertheless, I was disappointed in the control and recording of provenience; more precise field methods would surely have aided in the separation of artifactual materials and subsistence remains from the various components. In her letters to Ritchie, Butler refers to "overzealous" amateurs on her field crew; this may have had a profound effect on the control she was able to exercise on provenience recording.

Conclusions

In this thesis I attempted to reconstruct the culture history of the Goat Island Rockshelter site, as a means of demonstrating the usefulness of "old" data for answering "new" questions. In retrospect, however, two larger, and perhaps more anthropologically interesting, issues have been brought to the forefront.

The first issue concerns typology. Typologies -- whether for artifacts, sites, or phases -- while providing a sense of order (and perhaps a feeling of well-being) to archaeologists, can be normative straight-jackets. Typologies can mask change and variation -- the essence of anthropology. Some of the "peaks and lows" (Funk 1984) in our knowledge of prehistory -- for example, a predominance of sites that fall into the Late Archaic and Late Woodland Periods (see Funk 1978; Curtin and Bender 1990) -- may start to even out if archaeologists look for and try to explain diversity rather than forcing data into existing and uniform "types."

A second issue that confronted me in doing this project concerned another kind of attempt at order: geographical boundaries. The imposed political boundaries of a work entitled The Archaeology of New York State (Ritchie 1969a) are obvious. There are certainly differences between areas along the Mohawk, Susquehanna, Hudson and Delaware Rivers within New York State. Within those areas, there would likely be differences in the use of uplands and valley floors. The major river valleys likely acted as cultural constrainers, rather than as "cultural containers" (Snow 1980:12). Understanding prehistoric cultural connections between geographical areas will necessarily involve looking for sites in areas previously assumed not to contain sites, such as mountains (Chilton 1985, 1989), instead of assuming

that mountains formed natural barriers (cf. Ritchie 1969a:xxxii; Funk 1976:8). If we assume archaeological remains are distributed continuously over the landscape, the low density tails being infinite (Wobst 1983:39), then ignoring areas of few known sites amplifies our existing biases concerning prehistory.

The Potential of Ceramic Attribute Analysis

By focusing on attribute analysis, instead of typologies, archaeologists will be able to refine cultural chronologies and perceive cultural influences; relationships between isolated attributes are infinitely more complex than the relationships between "types", and, therefore, may more genuinely reflect the complexities of human cultures. In addition, attribute analysis can lead to an understanding of changes in the mechanical properties of pottery. For example, Braun (1983) has shown, for the Woodland Period in Illinois, that attributes of pottery (e.g., temper, wall shape, vessel shape) change to reflect subsistence economy (i.e., increasing importance of seed foods and cultivation). This kind of analysis, which will be the topic of my dissertation, needs to be done on the Woodland ceramics in the Northeast; it may contribute important information about the timing and mechanism for the shift to horticulture in this area.

Ceramic decoration -- the attribute that is most often used for "typing" ceramics -- is a communication device and

as such is constrained by the social and symbolic environment of the potter (Wobst 1977). It also often varies with the artifact's size and context in the social environment (Wobst 1977). Therefore, a detailed analysis of changes in ceramic decoration in relation to changes in other vessel attributes (e.g., shape, mechanical properties, size) may assist archaeologists in addressing larger scale questions such as: How did social organization change as a result of the adoption of agriculture? Does the Owasco ceramic tradition of the early Late Woodland really differ greatly and suddenly from earlier Point Peninsula ceramics, indicating the immigration of Iroquoian speakers as suggested by Snow (1990)? Do changes in ceramic technology and style reflect (1) the migration of peoples, (2) cultural influence, or (3) changes/differences in subsistence or social organization (such as tribalization or matrilineality)?

Finally, "old data" will be crucial for the building and testing of new and existing archaeological models (Starna 1981:66). In this thesis I have attempted to demonstrate the usefulness of "old data" for addressing contemporary, anthropological questions. "Old data" do not simply provide us with more data; they bring to light the issues of historical context in which all anthropology is embedded.

